

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

IN THE MATTER OF THE REQUEST OF
DOMINION ENERGY UTAH FOR
APPROVAL OF A VOLUNTARY
RESOURCE DECISION TO CONSTRUCT
AN LNG FACILITY

Docket No. 18-057-03

DIRECT TESTIMONY OF TINA M. FAUST

FOR DOMINION ENERGY UTAH

April 30, 2018

DEU Exhibit 2.0

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1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Tina M. Faust. My business address is 333 S. State, Salt Lake City, UT.

4 **Q. By whom are you employed and what is your position?**

5 A. I am employed by Dominion Energy Utah (DEU or Company) as the Director of Gas
6 Supply and Commercial Support. My qualifications are included in DEU Exhibit 2.01.

7 **Q. Have you testified before this Commission before?**

8 A. Yes.

9 **Q. Attached to your written testimony are DEU Exhibits 2.01 through 2.14. Were these**
10 **prepared by you or under your direction?**

11 A. Except as otherwise stated, the exhibits were prepared by me or under my direction. The
12 remaining exhibits are true and correct copies of what they purport to be.

13 **Q. What is the purpose of your direct testimony?**

14 A. I provide an overview of how natural gas is gathered from wells in remote production
15 fields and transported to gate stations that connect with the DEU distribution system. I
16 describe the risk of supply shortfalls associated with each step in that supply chain. I also
17 discuss the supply shortfalls the Company has experienced in recent years, as well as
18 those experienced by other similar local distribution companies in the western United
19 States. Further, I explain the risks to our customers resulting from supply shortfalls,
20 including the risk of loss of service on cold winter days.

21 I am also responsible for identifying the options available to ensure supply reliability to
22 DEU's customers to avoid supply shortfalls and loss of service, and for evaluating those
23 options. I offer testimony describing each option and explaining why the Company
24 selected an on-system Liquefied Natural Gas (LNG) storage facility as the optimal

25 method for addressing its supply reliability risk, which is described in greater detail in
26 DEU Exhibit 5.0, Direct Testimony of Michael L. Gill. In this regard, I provide evidence
27 showing that the proposed LNG facility is the best option to ensure that, even on the
28 coldest days, DEU can provide reliable and safe natural gas service to our customers.

29 **II. NATURAL GAS: FROM WELLHEAD TO DEMAND CENTER**

30 **Q. How does natural gas typically flow from the wellhead to an LDCs system, like**
31 **DEU's system?**

32 A. Natural gas is produced in locations that are hundreds of miles away from DEU's demand
33 center – its local distribution system that extends along the Wasatch Front, including
34 Utah County, Salt Lake County, Davis County and Cache County. Most of the gas
35 production that serves the DEU customers comes from thousands of wells in Utah,
36 Wyoming and Colorado. A map showing producing basins where these wells are
37 located, as well as the location of the interstate pipelines through which that gas is
38 transported, is attached as DEU Exhibit 2.02. Producers produce natural gas from the gas
39 wells and gather it through small-diameter lines to either processing plants or to interstate
40 pipelines. The gas sent to processing plants typically has non-methane hydrocarbons and
41 liquids that must be removed to obtain pipeline-quality natural gas that can be transported
42 on interstate pipelines and ultimately used by end-use customers. The majority of
43 processing plants that process gas for DEU are located in Wyoming. Once the wellhead
44 gas has been gathered and processed, it is then transported by upstream interstate
45 pipelines for delivery to DEU's distribution system. DEU Exhibit 2.03 shows the path
46 natural gas takes from wellhead to demand center.

47 **Q. Where along this natural gas path are supply disruptions likely to occur?**

48 A. Supply disruptions can occur anywhere along the path the gas travels from the wellhead
49 to DEU's distribution system. It is not uncommon during cold weather days for gas wells
50 to "freeze off," meaning that a small amount of water produced with the natural gas
51 crystallizes, blocks the flow of gas and shuts down production of the gas from the well.
52 Since wells cannot produce gas during freeze offs, natural gas that would otherwise be

53 produced does not flow into the system and cannot be transported to DEU's customers.
54 Similarly, cold weather can cause processing plants to cease operation, causing supply
55 shortfalls. Processing plants are vulnerable to compressor failures, power outages, and
56 other disrupting events, particularly during cold weather periods. Icy roads and remote
57 plant locations also hamper the ability for workers to quickly remedy production and
58 processing interruptions at wells and plants.

59 Supplies from interstate pipelines could be impacted by repair and maintenance on their
60 facilities. Upstream pipelines may also be subject to third-party line damage, landslides,
61 earthquakes, and other unanticipated events. Given the distance these pipelines travel
62 and the varying geography of the areas through which they pass, such risks are not
63 uncommon. To compound problems, line damage from third parties, landslides and
64 earthquakes often occur in remote areas, preventing repair crews from quickly addressing
65 line damage.

66 There are many ways supply may be disrupted before it reaches DEU's distribution
67 system. When these disruptions occur, DEU does not receive the natural gas it requires,
68 and is at risk of being unable to provide service to firm sales customers.

69 **III. RISK OF SUPPLY SHORTFALLS**

70 **Q. Has DEU experienced supply disruptions like those you've described?**

71 A. Yes. Unfortunately, disruptions in DEU's upstream supply chain have occurred in recent
72 years, preventing gas supplies from reaching DEU's system even during non-Design
73 Peak Days. For example, on January 6, 2017, the Intermountain West experienced very
74 cold temperatures. In particular, in gas production areas in Wyoming, temperatures were
75 significantly colder than in urban demand centers. For instance, the average daily
76 temperature in Big Piney, Wyoming was minus 25° F. Early that morning, DEU became
77 aware that processing plants were not delivering gas into Dominion Energy Questar
78 Pipeline (DEQP). Through the nomination process DEQP notified DEU that supplies
79 were not being delivered to the DEQP's system as expected. In fact, multiple processing
80 plants experienced disruptions, and remained off-line or severely under-producing for the

81 remainder of the day. That same day, Kern River Gas Transmission Company (Kern
82 River) also posted a notice that the Opal Processing Plant in Opal, Wyoming was
83 experiencing a power outage. As a result of the upstream supply disruptions, DEU was
84 short supplies for its firm sales customers and it was unclear how long the disruptions
85 would last.

86 **Q. Did this event result in a supply shortfall?**

87 A. Yes, temporarily. Fortunately, because of the relatively short duration of this event, DEU
88 was able to utilize additional storage withdrawals and purchase incremental gas to replace
89 the expected shortfalls, and was able to maintain service. However, it is important to
90 note that this event occurred on a day when the average temperature at the Salt Lake City
91 Airport was 6° F, well above DEU's Design-Peak Day temperature. Had temperatures
92 been lower, the Company would likely have been withdrawing storage volumes at
93 maximum contractual rates. This means that the availability of incremental storage
94 withdrawals would have been non-existent. The Company was fortunate that the cold
95 weather was not prolonged and that the disruptions were resolved within a few days. Had
96 the supply disruptions occurred on a Design-Peak Day, or if cold temperatures had
97 persisted for a longer period of time, DEU likely would have lost service to firm sales
98 customers.

99 **Q. Has DEU experienced other such events?**

100 A. Yes. Supply shortfalls have occurred multiple times for DEU during the last several
101 years. In addition to January 6, 2017, DEU experienced supply shortfalls due to cold
102 weather on December 5, 2013 and February 20, 2018. Fortunately, none of these cold
103 weather events were Design-Peak Day events, and the disruptions were relatively short in
104 duration.

105 **Q. How does DEU respond to supply shortfalls?**

106 A. Historically, DEU has been able to manage supply disruptions on days that are not
107 Design-Peak Days by purchasing additional supplies and utilizing available storage. As

108 mentioned previously, on a Design-Peak Day all storage resources will be fully utilized.
109 The Company's plan also assumes that all of its contracted supplies will be available,
110 even though history shows that there is a high probability that it will experience some
111 level of supply disruption. While relying on purchasing additional supplies on short
112 notice is theoretically viable, many of these supplies could also be disrupted, fail to
113 materialize as gas supply for the Company, and may not be available in the quantities
114 needed, if at all. Not to mention that the costs of purchasing supplies on the spot market
115 could be very high. Given the potential for supply disruptions, I am concerned that the
116 Company's historical practices described above are not sufficient to maintain safe and
117 reliable service to DEU customers. The Company has been fortunate that past
118 disruptions have been of a relatively short duration and did not take place during design-
119 day conditions. I do not believe it is wise to rely on good fortune to address supply
120 reliability for our increasing customer load. This is why DEU is requesting approval for
121 an on-system LNG storage facility.

122 **Q. Have other LDCs experienced similar supply disruptions?**

123 A. Yes. In February of 2011, New Mexico Gas Company and Southwest Gas Company
124 experienced loss of gas service to more than 40,000 customers in New Mexico and
125 Arizona. At that time, the Southwest United States was experiencing record-setting cold
126 weather. Many customers were without heat for a full week, while crews worked to
127 restore service. Also, DEU Exhibit 2.04 is an American Gas Association (AGA) SOS
128 inquiry where respondents shared their past experiences with lack of supply reliability.
129 In one case, in December of 2009, Northwest Natural Gas Company lost service to over
130 300 customers due to very cold weather coupled with unplanned equipment outages at a
131 regional gas storage facility (Jackson Prairie) and the interconnection point of two
132 upstream pipelines (Stanfield). These customers lost service for up to two days. In
133 another instance, in February of 2018, ATCO Gas Distribution lost supply to its gate
134 stations due to hydrates in the transmission system resulting in a freeze-off of
135 transmission system control facilities that in turn supplied ATCO Gas Distribution.

136 **Q. What is your understanding of the events that impacted Southwest Gas in 2011 that**
137 **resulted in a shortfall of supply to customers?**

138 A. According to Bill Moody, Vice President of Gas Supply for Southwest Gas, its Arizona
139 customers receive natural gas supply from three basins that lost 1,000,000 Dth/day during
140 the event. On March 2, 2011, the Arizona Corporation Commission held an open
141 meeting for the purpose of discussing the loss of service to over 20,000 Arizona
142 customers that resulted from the supply shortfall. I have attached, as DEU Exhibit 2.05, a
143 transcript of that meeting. In addition, I provided DEU Exhibit 2.06, which is a copy of
144 Bill Moody's PowerPoint that accompanied his presentation during that meeting.
145 In explaining the events, Mr. Moody stated, "[W]e don't know until afterwards when we
146 go out to purchase that gas and perhaps even the sellers of that gas to us are not certain
147 whether or not that gas will show up" (DEU Exhibit 2.05, page 22-28). The day of the
148 supply shortfall was "*a one in sixty year weather event.*" *Id.* (emphasis added). In fact,
149 in the days leading up to the event, Southwest Gas employees reported that they watched
150 the weather forecast, had received "critical operating condition emergency" notifications
151 from the upstream pipelines that they were "experiencing major difficulties", and had
152 purchased gas to meet their anticipated demand. *Id.* Southwest Gas also had an
153 emergency plan, which it followed, and complied with its winter operations guide.
154 Notwithstanding those preparations, Southwest Gas employees watched as the system
155 pressures dropped on the morning of February 2, 2011. Southwest Gas began to prepare
156 for curtailment, in the event that pressures continued to drop. Southwest Gas sent field
157 personnel out to critical facilities starting at 10:00 p.m. to monitor and ensure that no
158 mechanical issues occurred due to the cold weather. On February 3, the first alarm
159 occurred showing pressures were dropping to the point where customers were losing
160 service. *Id.*

161 **Q. If DEU experienced a disruption similar to Southwest Gas (or the other LDCs**
162 **identified above), how would that impact DEU's customers?**

163 A. If DEU's system experienced a similar supply disruption, and its customers lost service
164 for a week, the consequences could have been even more catastrophic than in Arizona.

165 On April 6, 2011, the Arizona Corporation Commission held an Open Meeting to allow
166 customers to discuss the consequences of the outage. DEU Exhibit 2.07 is a copy of the
167 transcript of that open meeting. During that meeting, customers in Arizona reported
168 significant difficulties resulting from the outage. For instance, customers described the
169 loss of heat in residences, including where elderly people lived. They reported
170 significant health risks to others. One 86-year-old man spent days in his living room
171 chair under blankets near a space heater (DEU Exhibit 2.07, page 32).

172 Because Utah winters are substantially colder than the temperatures that existed in
173 Arizona in 2011 when the service disruption occurred, I would expect the consequences
174 for customers to be far more serious. Customers in Utah have to cope with much colder
175 temperatures and, by extension, risk far more severe consequences to customers' health
176 and safety.

177 Additionally, if DEU experienced a similar outage to Arizona, I would expect significant
178 property damage. During the 2011 outage, Arizona residents reported "living out of a
179 suitcase" over 3 months after the outage because homes had been "destroyed" by burst
180 pipes (DEU Exhibit 2.08, page 23). As temperatures in Utah are far colder, I would
181 anticipate water pipe and home damage to be much more extensive.

182 Further, one would also expect businesses to suffer similar damage, as well as
183 consequential losses, such as the loss of product and sales. For instance, Loews Ventana
184 Canyon Resort in Arizona reported that, during the 2011 outage, it was unable to provide
185 heat or hot water for its guests during the entire outage. The resort reported that the
186 outage cost it at least \$200,000 (DEU Exhibit 2.08, page 10). When DEU has directed its
187 Firm Transportation customers to limit usage to match the supply being delivered on their
188 behalf, in response to their own upstream supply disruptions, many customers have
189 expressed concern about lost product, business losses, and damaged equipment.

190 If a significant supply shortfall resulted in a loss of service, DEU's firm sales customers
191 could face severe losses. In addition to the foregoing, in DEU Exhibit 3.0, Direct
192 Testimony of Michael L. Platt details the anticipated costs DEU would suffer, if such an
193 outage occurred. He estimates the high cost of relighting customers and discusses the
194 economic impact such an outage would have on the State of Utah. The cost of an outage
195 for customers, the Company and the State collectively would be significant.

196 **Q. How did regulators in Arizona respond to the public at the April 2011 public**
197 **meetings?**

198 A. The Arizona commission recognized the seriousness of the outage. Commissioner Stump
199 stated: “This obviously is a matter of public health and often survival. We heard many
200 stories last night and, of course, today in which that was very much the case. And there
201 is really nothing more serious than matters relating to public health and survival.” See
202 DEU Exhibit 2.08, page 34.

203 **Q. Did regulators take any action after the outages in the Southwest in February 2011?**

204 A. Yes. The Federal Energy Regulatory Commission (FERC), the New Mexico Public
205 Regulation Commission (NMPRC) and the Arizona Corporation Commission (ACC) all
206 launched investigations into this event.

207 **Q. Please describe the FERC inquiry.**

208 A. FERC initiated an inquiry into the gas outage and service disruptions on February 14,
209 2011. Its objectives were to identify the causes of the disruptions and to determine how
210 to prevent a recurrence. On May 9, 2011, FERC and the North American Electric
211 Reliability Corporation (NERC) announced that they would create a joint task force, and
212 in August 2011, the task force published a joint report on the findings (“FERC/NERC
213 Report”).

214 **Q. What did the task force conclude regarding the cause of the 2011 natural gas**
215 **outage?**

216 A. The FERC/NERC Report stated that “the difficulties encountered by LDCs in trying to
217 meet customer demand stemmed principally from supply declines in the basins, and
218 secondarily from problems encountered at processing plants.” DEU Exhibit 2.09.1, page
219 4, FERC Report on Outages and Curtailments During the Southwest Cold Weather Event
220 of February 1-5, 2011 (August 2011). In addition, the FERC found that, “a substantial
221 number of wells in the affected basins suffered freeze-offs, which had a significant effect

222 on production during the February cold weather event.” *Id. See* page 6. The report
223 estimated that the total U.S. natural gas supply during the event was reduced 9.4% per
224 day due to cold weather. This was comparable to previous production shut-ins associated
225 with interruptions caused by hurricanes, (DEU Exhibit 2.09.2, page 5). Production
226 declined 21% in the basins in Texas and New Mexico and “the declines in these basins,
227 together with the large increases in demand, were almost exclusively responsible for the
228 gas curtailments in Texas, New Mexico and Arizona.” *Id. See* page 6.

229 In summary, the FERC concluded that cold weather resulted in “widespread wellhead,
230 gathering system and processing plant freeze-offs and hampered repair and restoration
231 efforts” and that the “prolonged cold caused production shortfalls in the San Juan and
232 Permian Basins, the main supply areas for the LDCs that eventually curtailed service to
233 customers in New Mexico, Arizona and Texas.” *See* DEU Exhibit 2.09.3, page 4.

234 **Q. Did the FERC/NERC Report discuss storage as a solution to the 2011 natural gas**
235 **outage?**

236 **A.** Yes. The FERC/NERC Report stated:

237 Additional gas storage capacity in Arizona and New Mexico could have
238 prevented many of the outages that occurred by making additional supply
239 available during the periods of peak demand. Natural gas storage is a key
240 component of the natural gas grid that helps maintain reliability of gas
241 supplies during periods of high demand. Storage can help LDCs maintain
242 adequate supply during periods of heavy demand by supplementing
243 pipeline capacity, and can serve as backup supply in case of interruptions
244 in wellhead production. *Additional gas storage capacity in the*
245 *downstream market areas closer to demand centers in Arizona and New*
246 *Mexico could have prevented most of the outages that occurred by making*
247 *additional supply available in a more timely manner during peak demand*
248 *periods.*

249 *See* DEU Exhibit 2.09.3, page 5 and 6 (emphasis added).

250 **Q. Did the New Mexico Public Regulation Commission find a cause for the February**
251 **2011 outage?**

252 A. The NMPRC concluded in December 2012 that “the February 2011 system emergencies
253 were caused by a combination of a failure of upstream industry segments to supply and
254 deliver scheduled gas to NMGC because of a severe winter storm affecting the
255 southwestern U.S., weather-driven freeze-offs and rolling electrical blackouts in Texas,
256 and high weather-driven demand for gas by NMGC customers.” *See* DEU Exhibit 2.10,
257 page 20.

258 **Q. Did the Arizona Corporation Commission comment on the February 2011 outage?**

259 A. Yes. On March 2, 2011, the ACC held an Open Meeting regarding the outage. Attached
260 as DEU Exhibit 2.05 is a copy of the transcript of that meeting. During the meeting,
261 Arizona Commissioner Kennedy stated: “When outages like this occur, *human health*
262 *and safety is really put at risk and significant financial losses to businesses.* And I am
263 concerned about that.” *Id.* *See* page 79 (emphasis added). He added, “I don’t want the
264 past to occur in the future. *What we do here in Arizona might be able to assist other*
265 *providers around the United States so they don’t fall into the same shoes as we did here*
266 *today.*” *Id.* *See* page 80 (emphasis added).

267 **Q. Did Southwest Gas take any steps to prevent future outages?**

268 A. Yes. After the event, Southwest Gas sought Commission pre-approval of an on-system
269 LNG facility for the purpose of ensuring supply reliability. The Arizona Corporation
270 Commission approved the construction of the proposed facility, and it is now under
271 construction.

272 **Q. Has the Company experienced any other events that could have resulted in supply**
273 **and service disruptions?**

274 A. Yes. In January of 2005, St. George, Utah experienced significant flooding that washed
275 away homes and damaged infrastructure. Fortunately, the Company was able to continue

276 safely serving remaining customers, but it had to close block valves to isolate portions of
277 its feeder lines, leaving some customers without service.

278 Also, on August 5, 2014, a large landslide impacted a hillside in upper North Salt Lake,
279 adjacent to a DEU's feeder line and the Kern River pipeline. The landslide destroyed
280 homes and property and, for a period of time, put DEU and Kern River facilities at risk.
281 Again, the Company was able to maintain safe and reliable service to the customers who
282 were not directly impacted by the landslide by isolating its feeder line. Both events are
283 recent examples of flooding and landslide events that could have had far more serious
284 impacts had the circumstances played out differently. Had lines been more seriously
285 damaged, service disruptions would have resulted.

286 **Q. Given the supply shortfalls that DEU and other utilities have experienced during**
287 **cold weather, how confident are you that DEU will be able to avoid supply**
288 **disruptions and related loss of service in the future with the Company's existing**
289 **resources?**

290 A. I am not confident at all. Extreme weather and the resulting lack of gas supply reliability
291 are unpredictable and unforeseeable events. Weather forecasts can change quickly and
292 extreme cold can last longer than predicted. Shortfalls in supply are even less
293 predictable. Supply shortfalls have occurred historically and will continue to occur, and I
294 do not believe it is wise for the Company to simply hope that it will be fortunate in
295 avoiding a more major supply shortfall. Currently DEU relies on all of its current supply
296 options to perform on a Design-Peak Day, yet DEU has seen in recent years that supply
297 shortfalls happen even when temperatures are moderately cold. While DEU has been
298 able to get by with its current supply portfolio only suffering the consequence of the
299 fairly limited supply disruptions it has experienced in recent years, none of the events
300 occurred when the temperatures were approaching Design-Peak Day temperatures. DEU
301 must have plans in place to address supply shortfalls in the event of more serious supply
302 disruptions to ensure that its firm service customers do not lose natural gas service. For
303 this reason, DEU has undertaken to explore available supply alternatives to ensure
304 service reliability.

305 **IV. SUPPLY RELIABILITY OPTIONS**

306 **Q. How much additional gas supply would DEU have to obtain to ensure service during**
307 **a supply shortfall on a Design-Peak Day?**

308 A. Based on recent experience, DEU has determined that it would need a solution that would
309 provide 150,000 Dth/day for at least 8 days to avoid a potentially catastrophic disruption.
310 On January 6, 2017, DEU experienced a supply shortfall of over 100,000 Dth/day.
311 Because DEU's system is growing, and because there is potential for weather to be much
312 colder than it was on January 6, 2017, DEU would need a higher level of supply to
313 mitigate winter-time shortfalls.

314 **Q. Has the Company explored alternatives to address supply reliability issues?**

315 A. Yes. For some time, the Company has been carefully considering the options available to
316 address the disruption scenarios discussed above. The goal of this effort was to identify
317 the most advantageous option to provide a reliable supply source in the event of a supply
318 disruption on a very cold day. DEU reviewed each option considering first whether the
319 option would provide adequate, safe, and reliable supply when planned supplies are
320 disrupted on a cold day. The Company also considered the cost associated with each
321 option, the risks associated with each option, and other relevant factors. After evaluating
322 the options, DEU concluded that the construction of an on-system LNG storage facility in
323 close proximity to its demand center would best address the supply reliability risk. DEU
324 Exhibit 2.11 is a Supply Reliability Option Evaluation Summary that discusses in more
325 detail each option considered, as well as the factors presented by each. In addition, DEU
326 conducted a risk analysis, which is contained in DEU Exhibit 2.12. This analysis
327 discusses the likelihood of a supply shortfall occurring and the potential magnitude of the
328 consequences if such a shortfall happened. The risk analysis in DEU Exhibit 2.12 was
329 used in the consideration of the supply reliability options, and is referenced in DEU
330 Exhibit 2.11.

331 **Q. Please summarize the options considered.**

332 A. The first option considered was to essentially continue with the status quo, by continuing
333 to take the steps the Company has pursued in the past to address supply shortfalls. This
334 option is discussed in more detail in DEU Exhibit 2.11, page 6 and is referred to as the
335 “Utilize Existing Resources” option. This alternative would involve preserving the
336 existing aquifer supply and likely contracting for additional peaking supplies to be
337 delivered at Goshen. This option relies on upstream sources and third parties to provide
338 the necessary additional supply. As mentioned earlier, the supply disruptions DEU has
339 experienced in recent years have occurred on cold days, but not a Design-Peak Day.
340 Relying on the measures the Company has used in the past could result in a significant
341 loss of service to customers if a disruption occurs on a colder day, or for a more
342 prolonged period of time. This, together with future demand growth, the potential for a
343 significant supply shortfall and the high cost of the consequences of such an event, make
344 this a very high-risk option.

345 **Q. Why wouldn't this option provide adequate gas supply reliability?**

346 A. In order to mitigate a supply shortfall, DEU would have to call upon its aquifer storage
347 supplies from DEQP. However, withdrawals from the Aquifers are already included as a
348 critical component of the Company's Design-Peak Day supply portfolio. If DEU
349 reserved the Aquifers to address a supply disruption on a Design-Peak Day, it would need
350 to replace this supply in its Design-Peak Day supply portfolio. In other words, by
351 pursuing this option, the Company would need to look for another third-party supply
352 resource, making the Design-Peak Day even more susceptible to supply shortfalls and
353 therefore would provide little incremental benefit. In addition, this option would rely on
354 a third-party for storage and transportation (with resulting NAESB nomination
355 requirements), and therefore would not result in increased supply reliability (DEU
356 Exhibit 2.12, page 9).

357 **Q. Did DEU explore demand response programs as a solution?**

358 A. Yes. DEU considered demand response as an option to reduce gas load when supply

359 shortfalls occur. DEU looked at demand response programs for both larger and smaller
360 customers.

361 **Q. Can you describe this alternative?**

362 A. First I will discuss an option for larger customers. A large customer demand response
363 program requires the installation of equipment to allow DEU to remotely shut off large
364 customers' gas service (DEU Exhibit 2.11, pages 8 and 9). In addition, the program
365 would have to involve a sufficient number of customers to ensure that supply would be
366 available in the event of a significant supply disruption. The program would also have to
367 recognize that customer location would play a role in determining whether a demand
368 response would be required in a given situation.

369 **Q. Could temporarily stopping service to large customers adequately address a supply
370 shortfall?**

371 A. Not reliably. If DEU were to install remote control valves, the Company could have
372 complete control over the reduction of the customers' usage. However, the Company
373 would still not have control over the *availability of supply*. There is no guarantee that the
374 customers being curtailed actually have gas being delivered to the system on the day that
375 DEU would need replacement supplies, particularly if the surrounding system or the
376 source of supply is being impacted by similar supply disruptions. In fact, given that these
377 customers purchase gas supply from many of the same remote gas fields that DEU's gas
378 comes from, and that it travels through the same third-party gathering, processing and
379 interstate transportation systems, it is quite likely that, if DEU is experiencing a supply
380 shortfall, large customers would also be experiencing supply shortfalls. To the extent
381 that they rely on interruptible rather than firm upstream transportation, their supply
382 situation could be even worse. Put otherwise, if large customers were not receiving their
383 gas supply from upstream sources, having the ability to remotely shut off that customer's
384 gas would provide no replacement gas to assist with DEU's system's supply shortfall.

385

386 **Q. Are there other negative aspects of this option?**

387 A. Yes. Large customers are firm transportation customers who rely on their gas supply to
388 support and maintain their businesses. If DEU experienced a supply shortfall and were to
389 rely on demand response as a method for sustaining the necessary supply, large
390 customers would be placed in a position where they could lose gas service on very short
391 notice with no clear way to protect their businesses. Terminating service with little or no
392 notice could upset production processes, destroy equipment, and result in significant
393 financial losses and property damage.

394 **Q. Please describe the second demand response option for reducing the usage of**
395 **smaller customers.**

396 A. The Company also evaluated voluntary demand response programs that have been used
397 by SoCal Gas (DEU Exhibit 2.11, pages 10 and 11). This alternative would rely on firm
398 sales customers to voluntarily lower their thermostats when the Company experiences a
399 supply shortfall.

400 **Q. Could this option realistically address a significant supply shortfall?**

401 A. No. This option is very unreliable and unpredictable and, as a result, would not be an
402 adequate solution in the event of a supply shortfall. In fact, SoCal Gas used similar
403 programs, and concluded that the 2016-2017 demand response programs did not result in
404 a statistically significant reduction in gas usage by its customers (DEU Exhibit 2.13,
405 SoCal Gas 2016-2017 Winter Demand Response Load Impact Evaluation). This is not
406 surprising as demand response with small firm customers would be a voluntary program.
407 Furthermore, even if a sufficiently significant portion of firm sales customers were
408 willing to participate, this option would depend on each of those customers lowering their
409 thermostats at the appropriate time. Imagine what would happen if a supply shortfall
410 occurred in the middle of the night or early morning. Customers would likely be sleeping
411 and would want their homes to be well heated, particularly during very cold spells. The
412 Company could not rely on customers in this circumstance to respond to a supply
413 interruption notice to solve a disruption. Therefore, this option is not a reliable solution

414 to a supply shortfall.

415 **Q. Did DEU consider options provided by third parties?**

416 A. Yes. The Company explored eight options that rely on third-party off-system storage and
417 some form of interstate transportation to the DEU city gate.

418 **Q. Can you describe these alternatives?**

419 A. Four of the alternatives involve acquiring incremental storage and transportation services
420 using existing off-system facilities. The Company considered utilizing storage at
421 Ryckman Creek Gas Storage LLC, Clay Basin Gas Storage, Jackson Prairie Gas Storage
422 and the Coalville/Chalk Creek Aquifer Gas Storage facilities. These options are
423 explained on pages 21 through 28 of DEU Exhibit 2.11.

424 **Q. Can you summarize why off-system storage options would not be a reliable solution**
425 **to resolve a supply shortfall?**

426 A. Off-system storage and market supplies are dependent on interstate pipelines which need
427 to be nominated on a schedule set by NAESB. The NAESB nomination schedule is
428 shown on pages 13 and 14 of DEU Exhibit 2.12. Supply shortfalls often occur at night,
429 after the NAESB nomination schedule has already commenced. Replacement gas is
430 often not available in later nomination timeframes, especially during periods of high
431 demand. For a more detailed discussion of risks associated with the NAESB nomination
432 schedule, see DEU Exhibit 2.12.

433 **Q. Are there other concerns related to the transportation of gas from off-system**
434 **storage options as solutions for supply shortfalls?**

435 A. Yes. As I mentioned earlier, the geographic distance increases the risk that, somewhere
436 along that path, there could be third-party damage to a line, a landslide, a freeze-off, or
437 some other event that impedes gas supply to DEU's system. Relying on storage (that is

438 geographically distant from the DEU demand center) does not eliminate the risks of
439 supply shortfalls (DEU Exhibit 2.12).

440 **Q. Are there availability concerns with these options?**

441 A. Yes. Additional storage service is also largely unavailable. Currently there is no
442 incremental firm storage capacity available at Clay Basin or Jackson Prairie. Though it
443 may be possible to obtain more storage in the Aquifers, DEQP has indicated that, in order
444 to determine if additional storage is available, DEU must jointly fund a feasibility study
445 and a Front End Engineering Design (FEED) study for improvements to the Aquifers that
446 would allow expansion. Even if additional storage were available, DEQP has indicated
447 this option only provides up to [REDACTED] Dth/day (DEU Exhibit 2.11, page 27). This
448 amount is substantially lower than the amount required.

449 **Q. Given these considerations, do you believe that additional third-party owned off-**
450 **system storage and upstream transportation is a reliable solution to a supply**
451 **shortfall?**

452 A. No. Even if the options were available, they would still ultimately rely on multiple third
453 parties to remedy a supply shortfall. Any of these solutions would be vulnerable to many
454 of the same risks the Company is trying to remedy with an on-system LNG facility.

455 **Q. Did you explore any alternatives that delivered gas to a DEU city gate?**

456 A. The Company explored entering into a storage contract with Magnum Energy (Magnum)
457 [REDACTED]¹

458 **Q. Can you describe this alternative?**

459 A. Yes. Under this option, Magnum would create a salt cavern for natural gas storage at its
460 facility near Delta, Utah [REDACTED]

¹ The option involving delivery at [REDACTED] is the most recently-submitted Magnum option and supersedes other proposed bundled storage contract options at [REDACTED] and [REDACTED].

461 [REDACTED]. Additionally, in order for either options to be a viable
462 alternative, DEU would need to construct a new interconnect facility to receive this gas
463 into its distribution system. A more thorough explanation of all Magnum options
464 (including a map) is given on pages 12 through 20 of DEU Exhibit 2.11.

465 **Q. Are there challenges that would exist with these options?**

466 A. Yes. Magnum's salt cavern facility is over 100 miles from the DEU demand center.
467 DEU would need to make substantial facility additions along with paying for the storage
468 service. As Mr. Gill explains, these DEU interconnect facilities at [REDACTED] would cost
469 [REDACTED]
470 [REDACTED] (DEU Exhibit 5.0).

471 **Q. What other alternatives has DEU explored?**

472 A. DEU explored entering into a storage contract with Magnum [REDACTED]
473 [REDACTED] (DEU Exhibit 2.11, page 15 and 16).

474 **Q. Why did the Company reject this option?**

475 A. To ultimately get the gas from [REDACTED] to DEU's demand center, DEU would need to
476 [REDACTED]
477 [REDACTED]
478 [REDACTED]
479 While Magnum Storage may be part of DEUs supply portfolio in the future, it is not the
480 best option to remedy the supply shortfalls the Company is seeking to currently address.

481 **Q. What other alternatives have you explored?**

482 A. The Company also explored entering into a contract with Magnum whereby DEU would
483 [REDACTED]
484 [REDACTED]
485 [REDACTED] (DEU Exhibit 2.11, page 17 and 18).

486 **Q. Would you recommend this option for supply reliability?**

487 A. No. [REDACTED]

488 [REDACTED]

489 [REDACTED]

490 **Q. What other alternatives have you explored?**

491 A. Dominion Energy explored an on-system storage option utilizing an LNG facility. Mr.
492 Gill describes this facility in detail in his direct testimony (DEU Exhibit 5.0).

493 **Q. Would this option provide supply reliability in the event of a supply disruption?**

494 A. Yes. An on-system LNG facility would provide a reliable source of replacement supply
495 that would be operated and dispatched by DEU in the event of a supply disruption. On-
496 system storage provides flexibility, diversity of supply and reliability that other supply
497 options simply cannot. Reliability is an attribute that cannot be overstated. In fact, an
498 LNG facility is the only alternative that provides a supply reliability solution for all the
499 risks the Company has identified. In addition, gas from on-system storage does not need
500 to be purchased or nominated at the time of need, and is delivered directly to the
501 distribution system on short notice. With a 15 million gallon LNG storage tank, the
502 Company could vaporize 150,000 Dth/day, all day, for eight consecutive days and be able
503 to maintain pressure for firm customers in the event of supply shortfalls or other system
504 emergencies. Because an LNG facility could be located very near the demand center, this
505 option would provide immediate help and is not dependent on long transmission pipelines
506 that are vulnerable to land movement, third-party damage, forest fires, floods, washouts,
507 corrosion, regulatory shutdowns, earthquakes, and other force majeure events (DEU
508 Exhibit 2.11, pages 31 and 32). As described by Mr. Gill, the facility itself can be
509 designed to mitigate local risks that could impact the site (DEU Exhibit 5.0).

510 **Q. The cost of the proposed LNG facility is more than some of the options you**
511 **considered. Given that, why did the Company select the LNG option?**

512 A. As I mentioned, without having salt caverns or depleted gas reservoirs near our demand

513 center, an on-system LNG storage facility is the only alternative that will fully address
514 the supply reliability risk in the event of upstream supply disruptions. In other words,
515 while other options considered could be less expensive, they do not address the
516 underlying reliability issue and, for that reason, are not viable alternatives. On-system
517 storage is used by many utilities in North America for supply reliability. Off-system
518 solutions are vulnerable to the same disruptions the Company and other previously
519 mentioned LDCs have recently experienced. The LNG option would not be subject to
520 these same risks, and would provide safe and reliable service in the event of a supply
521 shortfall like those the Company has experienced over the past five years.

522 **Q. In conducting your evaluation, did you consider what other utilities have done to**
523 **address supply reliability concerns?**

524 A. Yes. After the 2011 outage, Southwest Gas began evaluating solutions to its supply
525 reliability problem. It conducted an analysis and determined that an on-system LNG
526 facility was the best solution. Southwest Gas is currently constructing that facility near
527 Tucson.

528 In its Application in Docket No. G-01551A-14-0024, Southwest Gas stated, “The
529 primary purpose of the proposed LNG storage facility is to have readily available local
530 gas supply to dispatch into Southwest Gas’ distribution system during severe supply
531 disruption events” (DEU Exhibit 2.14, page 5). Southwest Gas also observed, “By
532 having readily available local natural gas supply that can be timely dispatched into
533 sections of its distribution system upon demand, an LNG storage facility will support
534 Southwest Gas’ ongoing efforts to enhance the reliability of segments of its distribution
535 system and mitigate against future service interruptions resulting from supply shortage
536 events.” *Id.* Page 6.

537 **Q. Do other utilities have on-system LNG facilities that are used to maintain supply**
538 **reliability in the event of a supply disruption?**

539 A. Yes. Out of 50 respondents to a recent AGA survey, 20 LDCs stated they used on-
540 system LNG to maintain supply reliability. DEU Exhibit 2.04.

541 **Q. In addition to the supply reliability benefits discussed above, are there any other**
542 **ancillary benefits?**

543 A. Yes. The Company could utilize this facility to provide service to remote communities at
544 a lower cost than extending pipeline facilities to these customers. For example, it would
545 cost approximately \$95 million for a high-pressure mainline to serve the town of Kanab
546 versus a satellite LNG facility at a cost of approximately \$22 million. Likewise, the town
547 of Green River could be served via high pressure mainline at a cost of approximately \$43
548 million versus serving the same community with satellite LNG at a cost of approximately
549 \$15 million. Additionally, the Company could utilize LNG to maintain service to
550 customers during maintenance or an emergency.

551 **Q. Can you summarize your recommendation?**

552 A. Yes. Based on recent events on the DEU system and in other areas near DEU's system,
553 there is currently a risk that during a cold weather event, or other unpredictable supply
554 shortfalls, a significant portion of DEU's gas supply will be disrupted. Based on the
555 Company's evaluation of costs, risks and reliability, an on-system LNG storage facility is
556 the most reliable option to offset these anticipated supply shortfalls. I recommend that
557 the Commission find that the construction and operation of an on-system LNG storage
558 facility is in the public interest and approve the Company's Application in this matter.

559 **Q. Do you believe that approval of the application in this docket is just, reasonable and**
560 **in the public interest?**

561 A. Yes.

562 **Q. Does this conclude your testimony?**

563 A. Yes.

State of Utah)
) ss.
County of Salt Lake)

I, Tina Faust, being first duly sworn on oath, state that the answers in the foregoing written testimony are true and correct to the best of my knowledge, information and belief. Except as stated in the testimony, the exhibits attached to the testimony were prepared by me or under my direction and supervision, and they are true and correct to the best of my knowledge, information and belief. Any exhibits not prepared by me or under my direction and supervision are true and correct copies of the documents they purport to be.

Tina Faust

SUBSCRIBED AND SWORN TO this _____ day of April, 2018.

Notary Public